PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION CONCERNING TRANSMITTAL OF COPY OF INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (CHAPTER I OF THE PATENT COOPERATION TREATY)
(PCT Rule 44bis.1(c))

To:

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Date of mailing *(day/month/year)* 28 May 2009 (28.05.2009)	
Applicant's or agent's file reference 09991-258WO1	**IMPORTANT NOTICE**

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2007/084771	15 November 2007 (15.11.2007)	16 November 2006 (16.11.2006)

Applicant
FUJIFILM DIMATIX, INC. et al

The International Bureau transmits herewith a copy of the international preliminary report on patentability (Chapter I of the Patent Cooperation Treaty)

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Simin Baharlou
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Form PCT/IB/326 (January 2004)

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference 09991-258WO1	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/US2007/084771	International filing date *(day/month/year)* 15 November 2007 (15.11.2007)	Priority date *(day/month/year)* 16 November 2006 (16.11.2006)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant FUJIFILM DIMATIX, INC.		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 19 May 2009 (19.05.2009)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Simin Baharlou e-mail: pt09.pct@wipo.int

Form PCT/IB/373 (January 2004)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
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PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	10 NOV 2008
Applicant's or agent's file reference 09991-258WO1	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US 07/84771	15 November 2007 (15.11.2007)	16 November 2006 (16.11.2006)

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - B28B 11/06 (2008.04)
USPC - 264/11,129,131,132

Applicant FUJIFILM DIMATIX, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	18 October 2008 (18.10.2008)	Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 07/84771

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed.

   ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of:

   a. type of material

      ☐ a sequence listing

      ☐ table(s) related to the sequence listing

   b. format of material

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing

      ☐ contained in the international application as filed

      ☐ filed together with the international application in electronic form

      ☐ furnished subsequently to this Authority for the purposes of search

4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. *Additional comments:*

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 07/84771

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-11, 14-34	YES
	Claims	12-13	NO
Inventive step (IS)	Claims	none	YES
	Claims	1-34	NO
Industrial applicability (IA)	Claims	1-34	YES
	Claims	none	NO

2. Citations and explanations:

Claims 12 and 13 lack novelty under PCT Article 33(2) as being anticipated by US2005/0157148 A1 to Baker et al. (hereinafter 'Baker')

As per claim 12 Baker discloses a method of printing depositing, or coating comprising:
depositing a layer of a flowable non-food substrate on an article; ;(para [0020][0028] and jetting fluid to form a pattern on the flowable substrate layer. ;(para [0005]).

As per claim 13 Baker discloses a method of claim 12, wherein the flowable substrate layer has a viscosity of about 30,000 Poise or less (para [0004] [0007] [0021]).

Claims 1-8, 10-11, 14-19 and 29-30 lack an inventive steps under PCT Article 33(3) as being obvious in view of Baker and further in view of US 6,207,003 B1 McClure et al. (hereinafter 'McClure')

As per claim1 McClure teaches a method of printing, depositing, or coating on a flowable substrate comprising:
McClure teaches extruding a flowable non-food substrate on a support (col 2 ln 14); but fails to disclose jetting fluid to form an image on the flowable substrate however Baker teaches jetting fluid to make image (para[0006][0019]).
Thus it would have been obvious to one of ordinary skill in the art to combine the teachings of McClure and Baker and have method of printing, depositing as described in claim to improve electrical property of the layer.

As per claim 2 Baker discloses a method of claim 1, further comprising transforming the flowable substrate into a solid state after jetting fluid on the flowable substrate. ; (para [0025).

As per claim 3 Baker teaches a method of claim 2, but fails to disclose wherein transforming comprises placing the flowable substrate in a water bath, however McClure further teaches cooling flowable substrate with cooling water (col 5 ln 42-43).Thus it would have been obvious to one of ordinary skill in the art to combine the teachings of Baker and McClure and cool the substrate to solidify the layer.

As per claim 4 Baker discloses the method of claim 1 ,wherein the fluid is jetting using an ink jet printer para [0004].

As per claim 5 Baker discloses a method of claim1, further comprising moving the flowable substrate along a conveyor (para [0016]).

As per claim 6 McClure further teaches the method of claim 1 but fails to specify wherein the flowable substrate comprises a viscoelastic material however McClure teaches liquid polymer material (col 5 ln 6 -7,15). Thus it would have been obvious to one of ordinary skill in the art to have polymer which is viscoelastic in order to optimize the electrical and mechanical properties of coating.

As per claim 7 McClure further teaches the method of claim 6, but fails to teach wherein the viscoelastic material comprises molten plastic, however McClure teaches liquid polymer material (col 5 ln 6 -7,15). Thus it would have been obvious to one of ordinary skill in the art to replace polymer with molten plastic to get the desired properties of coating material.

As per claim 8 McClure teaches the method of claim 1, but fails to specify wherein the flowable substrate is extruded through a die to form an extrudate however McClure teaches patterning wheel (col 2 ln 14-15). Thus it would have been obvious to one of ordinary skill in the art to modify the the design to extrudate flowable substrate to design any pattern.

As per claim 10 and 19 Baker discloses a method of claim 1, wherein the fluid comprises ink droplets. (para[0019]).

As per claim 11 Baker discloses a method of claim 1, wherein the flowable substrate has a viscosity of about 30,000 Poise or less (para [0004] [0007] [0021]).

As per claim 14 Baker discloses the method of claim 12, but fails to teach further comprising curing the flowable substrate layer from a flowable state into a solid state after jetting fluid droplets on the flowable layer however McClure teaches curing flowable substrate (col 6 ln 19-20). Thus it would have been obvious to one of ordinary skill in the art to combine the teachings of McClure and Baker and have flowable layer cured to adjust the viscosity.

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.

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Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:

As per claim 15 Baker discloses a method of claim 12, but fails to disclose wherein the flowable layer and pattern form a surface, and a second flowable substrate layer is coated on the surface. However McClure teaches multiple layers (col 2 ln 30-31). Thus it would have been obvious to one of ordinary skill in the art to combine the teachings of McClure and Baker and have multiple layers to improve electrical property of the layer.

As per claim 16 Baker further teaches the method of claim 15, further comprising jetting fluid to form a second pattern on the second flowable layer(para [0005]).

As per claim 17 and 30 McClure further teaches the method of claim 16, further comprising curing the flowable layers after jetting the second pattern on the surface (col 2 ln 26).

As per claim 18 McClure further teaches the method of claim 17, wherein the patterns and layers form a wood grain, texture, or decorative pattern (col 2 ln 18-19).

As per claim 29 McClure and Baker teaches a system for jetting fluid on a flowable non-food substrate, comprising:
Baker teaches an ink jet printer to jet fluid on a substrate in a pattern; (para [0005])
a support for a flowable non-food substrate adjacent to the ink jet printer so that the ink jet printer can jet fluid on the flowable substrate; (para [0004]) and McClure further teaches an extruder configured to extrude the flowable substrate onto the support upstream from the ink jet printer (col 2 ln 14); Thus it would have been obvious to one of ordinary skill in the art to combine the teachings of McClure and Baker and have method of printing, depositing as described in claim to improve electrical property of the layer.

Claims 20-21 lack an inventive steps under PCT Article 33(3) as being obvious in view of A1 to Baker and further in view of US 2005/0067292 A1 to Thompson et al. (hereinafter 'Thompson')

As per claim 20 Baker teaches the method of claim 12, but fails to disclose wherein the flowable substrate is a member selected from the group consisting of coatings, glazes, paints, and varnishes. However Thompson teaches coating (para[0089]. Thus it would have been obvious to one of ordinary skill in the art to combine the teachings of Baker and Thompson and
coat the flowable substrate to give smooth layer.

As per claim 21 Thompson further teaches the method of claim 20, wherein the coatings comprise dielectric material (para[0089].

Claims 22-24, 26-27 and 32-33 lack an inventive steps under PCT Article 33(3) as being obvious in view of Baker and US 5,340,656 A to Sachs et al. (hereinafter 'Sachs')

As per claim 22 Baker further teaches the method of claim 12, but fails to teach wherein the article comprises wood, plastic, metal, or ceramic. However Sachs teaches article comprises plastic, metal, or ceramic (col 2 ln 62-63). Thus it would have been obvious to one of ordinary skill in the art to combine the teachings of Baker and Sachs and have article comprising, plastic, metal, or ceramic to give versatility in coating surfaces.

As per claim 23 Baker teaches the method of claim 12, but fails to specify wherein the article comprises medium density fiber board wood, however Sachs teaches article comprises plastic, metal, or ceramic(col 2 ln 62-63). Thus it would have been obvious to one of ordinary skill in the art to modify the teachings of Sachs and include fiber board wood as substrate.

As per claim 24 Sachs teaches a method of printing, depositing or coating comprising:
applying powder on a surface of a support; (col 2 ln 62), Baker further teaches jetting fluid on the powder on the support; (para[0006][0019]) and Sachs further teaches
causing the powder to flow and coat the surface of the support (col 2 ln 66, col 3 ln 1-2).
Thus it would have been obvious to one of ordinary skill in the art to combine the teachings of Sachs and Baker and have method of printing, depositing with a powder layer thus improving the resolution and improving production.

As per claim 26 Sachs further discloses the method of claim 24, wherein the powder comprises a thermoset or thermoplastic material (col 3 ln 12-14 and (col 4 ln 38).

As per claim 27 Baker discloses a method of claim 24, wherein the fluid is jetted using a piezoelectric printhead ;(para [0018]).

As per claim 32 Baker teaches a system for depositing jetting fluid on a powdered surface of a substrate, comprising:
an ink jet printer to jet fluid on a substrate in a pattern; (para [0004])
a support for a substrate adjacent to the ink jet printer so that the ink jet printer can jet fluid on the substrate; (para [0004]) and Sachs further teaches
a station for dispensing powder on a surface of the substrate upstream from the ink jet printer (col 3 ln 45-50). Thus it would have been obvious to one of ordinary skill in the art to combine the teachings of Sachs and Baker and have method of printing, depositing with a powder layer thus improving the resolution and improving production.

As per claim 33 Sachs further teaches the system of claim 32, further comprising a station to cause the powder to flow and cover the surface of the substrate (col 3 ln 45-50).

Claims 9 and 31 lack an inventive steps under PCT Article 33(3) as being obvious in view of Baker and McClure and Sachs.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

As per claim 9 and 31 McClure teaches the method of claim 1 and 29 but donot teach further comprising forming the substrate into individual articles. However Sachs teaches making parts from substrate (col 3 ln 2-7). Thus it would have been obvious to one of ordinary skill in the art to combine the teachings of McClure , Baker and Sachs have method of making individual articles using the flowable substare.

Claims 28 lack an inventive step under PCT Article 33(3) as being obvious in view of Sachs, Baker and further in view of Thompson.

As per claim 28 Sachs and baker teaches the method of claim 24, but fails to teach wherein the support comprises metal. However Thompson teaches metal support (para[0090]. Thus it would have Thus it would have been obvious to one of ordinary skill in the art to combine the teachings of Sachs and Baker and Thompson to have metal support to make it conductive.

Claims 25 and 34 lack an inventive steps under PCT Article 33(3) as being obvious in view of Baker and Sachs and further in view of US 6,673,416 B1 to Nishio (hereinafter 'Nishio')

As per claim 25 Sachs and Baker teaches the method of claim 24, but fails to teach wherein the powder is electrostatically applied to the support. However Nishio teaches applying powder electrostatically (col 4 ln 14-15). Thus it would have been obvious to one of ordinary skill in the art to combine the teachings of Sachs and Baker and Nishio and have smooth coating surface.

As per claim 34 Sachs and Baker teaches the system of claim 32, but fails to teach wherein the powder is electrostatically applied to the surface. However Nishio teaches applying powder electrostatically (col 4 ln 14-15). Thus it would have been obvious to one of ordinary skill in the art to combine the teachings of Sachs and Baker and Nishio and have smooth coating surface.

Claims 1-34 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made and used in industry.